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10/528,253	03/17/2005	Josep Rius Vazquez	NL02 0875 US	4263

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EXAMINER	
ISLA RODAS, RICHARD	

ART UNIT	PAPER NUMBER
2829	

DATE MAILED: 12/11/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/528,253	RIUS VAZQUEZ ET AL.	
	Examiner	Art Unit	
	Richard Isla-Rodas	2829	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *23 September 2005*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-14* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-14* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *17 March 2005* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Specification

1. The specification submitted 3/17/2005 is objected to because it does not contain all of the contents required (see letters f, g and i above)

Content of Specification

(a) Title of the Invention: See 37 CFR 1.72(a) and MPEP § 606. The title of the invention should be placed at the top of the first page of the specification unless the title is provided in an application data sheet. The title of the invention should be brief but technically accurate and descriptive, preferably from two to seven words may not contain more than 500 characters.

(b) Cross-References to Related Applications: See 37 CFR 1.78 and MPEP § 201.11.

(c) Statement Regarding Federally Sponsored Research and Development: See MPEP § 310.

(d) The Names Of The Parties To A Joint Research Agreement: See 37 CFR 1.71(g).

(e) Incorporation-By-Reference Of Material Submitted On a Compact Disc: The specification is required to include an incorporation-by-reference of electronic documents that are to become part of the permanent United States Patent and Trademark Office records in the file of a patent application. See 37 CFR 1.52(e) and MPEP § 608.05. Computer program listings (37 CFR 1.96(c)), "Sequence Listings" (37 CFR 1.821(c)), and tables having more than 50 pages of text were permitted as electronic documents on compact discs beginning on September 8, 2000.

(f) Background of the Invention: See MPEP § 608.01(c). The specification should set forth the Background of the Invention in two parts:

(1) Field of the Invention: A statement of the field of art to which the invention pertains. This statement may include a paraphrasing of the applicable U.S. patent classification definitions of the subject matter of the claimed invention. This item may also be titled "Technical Field."

(2) Description of the Related Art including information disclosed under 37 CFR 1.97 and 37 CFR 1.98: A description of the related art known to the applicant and including, if applicable, references to specific related art and problems involved in the prior art which are solved by the applicant's invention. This item may also be titled "Background Art."

(g) Brief Summary of the Invention: See MPEP § 608.01(d). A brief summary or general statement of the invention as set forth in 37 CFR 1.73. The summary is separate and distinct from the abstract and is directed toward the invention rather than the disclosure as a whole. The summary may point out the advantages of the invention or how it solves problems previously existent in the prior art (and preferably indicated in the Background of the Invention). In chemical cases it should point out in general terms the utility of the invention. If possible, the nature and gist of the invention or the inventive concept should be set forth. Objects of the invention should be treated briefly and only to the extent that they contribute to an understanding of the invention.

(h) Brief Description of the Several Views of the Drawing(s): See MPEP § 608.01(f). A reference to and brief description of the drawing(s) as set forth in 37 CFR 1.74.

(i) Detailed Description of the Invention: See MPEP § 608.01(g). A description of the preferred embodiment(s) of the invention as required in 37 CFR 1.71. The description should be as short and specific as is necessary to describe the invention adequately and accurately. Where elements or groups of elements, compounds, and processes, which are conventional and generally widely known in the field of the invention described and their exact nature or type is not necessary for an understanding and use of the invention by a person skilled in the art, they should not be described in detail. However, where particularly complicated subject matter is involved or where the elements, compounds, or processes may not be commonly or widely known in the field, the specification should refer to another patent or readily available publication which adequately describes the subject matter.

(j) Claim or Claims: See 37 CFR 1.75 and MPEP § 608.01(m). The claim or claims must commence on separate sheet or electronic page (37 CFR 1.52(b)(3)). Where a claim sets forth a plurality of elements or steps, each element or step of the claim should be separated by a line indentation. There may be plural indentations to further segregate subcombinations or related steps. See 37 CFR 1.75 and MPEP § 608.01(i)-(p).

(k) Abstract of the Disclosure: See MPEP § 608.01(f). A brief narrative of the disclosure as a whole in a single paragraph of 150 words or less commencing on a separate sheet following the claims. In an international application which has entered the national stage (37 CFR 1.491(b)), the applicant need not submit an abstract commencing on a separate sheet if an abstract was published with the international application under PCT Article 21. The abstract that appears on the cover page of the pamphlet published by the International Bureau (IB) of the World Intellectual Property Organization (WIPO) is the abstract that will be used by the USPTO. See MPEP § 1893.03(e).

(l) Sequence Listing, See 37 CFR 1.821-1.825 and MPEP §§ 2421-2431. The requirement for a sequence listing applies to all sequences disclosed in a given application, whether the sequences are claimed or not. See MPEP § 2421.02.

Claim Objections

2. It appears from the drawings that the clock generator (CG in Figure 2) comprises the control circuit (OSC, C2, FS and RE4). Therefore, both elements should not be recited as two separate elements but as an element comprising the other.

Appropriate correction is required.

Claim Rejections - 35 USC § 101

3. 35 U.S.C. 101 reads as follows:

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

Claim 13 is rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter. In order to be granted a patent a method must produce a concrete and tangible result as a result of claimed steps. The method as recited, *"comparing the count number with a reference number to supply a pass/fail*

signal", fails to produce such result because the step of "comparing" or "supplying" is neither tangible nor concrete. In order to be given patentable weight the claim must disclose structure capable of taking the pass/fail signal and either manipulate it or transform it to produce a tangible result such as, for example, showing the result on a display.

Claim Rejections - 35 USC § 112

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

5. Claims 1-10 are rejected under 35 U.S.C. 112, second paragraph, as being incomplete for omitting essential structural cooperative relationships of elements, such omission amounting to a gap between the necessary structural connections. See MPEP § 2172.01.

The omitted structural cooperative relationships are: structure relating the counter, the driver and the comparator. Although a recitation of how the elements are related functionally is present (*"the count period has a start determined by the star of the testing cycle I* -determined by the switch- *and an end determined by an instant the voltage at the terminal crosses the reference value* -v"), the elements must be structurally related (recited as "coupled" or "connected") in order for the functional recitations to carry patentable weight.

6. Claims 2, 7 and 8 are further rejected under 35 U.S.C. 112, second paragraph, as being incomplete for omitting essential structural cooperative relationships of

elements, such omission amounting to a gap between the necessary structural connections. See MPEP § 2172.01.

- Claim 2 recites the limitation "the IDDQ" in line 5. There is insufficient antecedent basis for this limitation in the claim.

- Claim 7 recites the limitation "the further counted number" in line 4. There is insufficient antecedent basis for this limitation in the claim.

- Claim 8 recites the limitation "a reference number" in line 6. The limitation was previously recited in claim 1. It appears that "the reference number" should replace the limitation.

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

8. Claims 1, 2, 13 and 14 are further rejected under 35 U.S.C. 103(a) as being unpatentable over the US Patent to Okandan et al. (6,348,806) in view of the US Patent to Wang (6,845,480).

In terms of claim 1, Okandan et al. (referred to as Okandan hereinafter) shows in Figure 3, a power supply (VDD), a switch (66) coupled to a terminal of the circuit under test (52), a driver (60) controlling the switch, a comparator (62) comparing voltage at the

terminal with a reference value (Vref), a clock generator (Fref) supplying clock pulses, a counter (54) for counting clock pulses. The driver (60) drives the switch "on" at the same time it starts the counter, then shuts the switch "off" at the same time it stops the counter. The driver is actuated by comparator 62 which senses the voltage at the terminal of the circuit under test 52 and triggers the driver when said voltage crosses the reference value (Vref). Furthermore, Okandan shows a threshold circuit (56) which provides a pass/fail signal (signal QBI provides a pass/fail signal as described in lines 44-47 of column 4) when it compares the value from the counter with a reference stored in the control element (element 56 is a comparator that compares output from element 54 to supply a pass/fail signal. Inherently, the element includes a stored reference number). Okandan teaches all of the claimed elements as discussed above except for a control circuit controlling the value of the reference number that the threshold circuit uses to compare the count and determine if the signal outputted should be a pass of fail. The practice of using a control circuit to control the nature of a signal is however, well known in the art. Wang, drawn to systems for test pattern generators, shows in Figure 4 a control device (403) that controls the nature of a signal sent to a comparator (401). It would have been obvious to one of the ordinary skill in the art, at the time of the invention, to use the teachings of control devices controlling the nature of outputted signals as disclosed by Wang to include a control element to modify the reference number used by the comparator in the device disclosed by Okandan in order to include a plurality of references that the comparator may compare the output of the counter against and therefore expanding the range of possible readings.

As to claim 2, Wang showsin Figure 4, the control circuit (403) comprises an input (for receiving the labeled "control signal") for receiving externally determined information (control signal). The recitation *"a test apparatus to test integrated circuits"* is an attribute of the device under test rather than an attribute of the claimed apparatus for use in testing electronic devices. As such, a recitation of the nature of the electronic device the claimed apparatus is intended to test constitutes a matter of intended use (Okandan's apparatus can be used to test devices that include integrated circuits because it comprises all of the structural limitations claimed by the applicant in order to do so). It has been held that a recitation with respect to the manner in which a claimed apparatus is intended to be employed does not differentiate the claimed apparatus from a prior art apparatus satisfying the claimed structural limitations. *Ex parte Masham, 2 USPQ F.2d 1647 (1987).* Furthermore, absent a clear description of how the claimed elements are structurally connected to each other, the recitation *"on a correlation between...."* that connect the structural elements in terms of function rather than structure are not given patentable weight.

As to claim 13, Okandan teaches in Figure 3, a method of testing a device including the steps of supplying a power supply voltage (Vdd) via a switch (66) coupoled to a terminal of the circuit under test (52), controlling the switch (60) to remove the power supply voltage from the terminal at the start of the testing cycle (flip flop 60 activates the switch when a comparator 62 determines the start of a testing cycle), comparing the voltage (using comparator 62) at the terminal with a reference value (Vref), supplying a clock pulse (Freg), counting the clock pulses (using counter 54) to

obtain a count number over a period determined by the start of the testing cycle (determined by comparator 62), comparing the count number (using threshold circuit 56) with a reference number (inherently present and stored within the threshold circuit) to supply a pass/fail signal. Okandan teaches all of the claimed steps as discussed above except for the step of controlling the value of the reference number that the threshold circuit uses to compare the count. The practice of using a control circuit to control the nature of a signal is however, well known in the art. Wang, drawn to systems for test pattern generators, shows in Figure 4 a control device (403) that controls the nature of a signal sent to a comparator (401). It would have been obvious to one of the ordinary skill in the art, at the time of the invention, to use the teachings of control devices controlling the nature of outputted signals as disclosed by Wang to include a control element to modify the reference number used by the comparator in the device disclosed by Okandan in order to include a plurality of references that the comparator may compare the output of the counter against and therefore expanding the range of possible readings.

As to claim 14, Okandan shows in Figure 3, an integrated circuit comprising a switch (66) coupled to a terminal of a circuit under test (52), a driver (60) controlling the switch, a comparator (62) comparing voltage at the voltage terminal with a reference value (Vref), a clock generator (Freg) supplying clock signals, a counter (54), a threshold circuit (56) comparing count number with a prerecorded number stored in the circuit (element 56 is a comparator that compares output from element 54 to supply a pass/fail signal. Inherently, the element includes a stored reference number). Okandan

teaches all of the claimed elements as discussed above except for a control circuit controlling the value of the reference number that the threshold circuit uses to compare the count. The practice of using a control circuit to control the nature of a signal is however, well known in the art. Wang, drawn to systems for test pattern generators, shows in Figure 4 a control device (403) that controls the nature of a signal sent to a comparator (401). It would have been obvious to one of the ordinary skill in the art, at the time of the invention, to use the teachings of control devices controlling the nature of outputted signals as disclosed by Wang to include a control element to modify the reference number used by the comparator in the device disclosed by Okandan in order to include a plurality of references that the comparator may compare the output of the counter against and therefore expanding the range of possible readings.

9. Claims 3, 6, 7 and 12 are further rejected under 35 U.S.C. 103(a) as being unpatentable over the US Patent to Okandan et al. (6,348,806) in view of the US Patent to Wang (6,845,480) further in view of the US Patent to Krishnan et al. (5,535,015).

In terms of claims 3 and 7, Okandan in view of Wang teach all of the claimed elements as discussed above except for the control circuit (included as part of the clock generator, as shown in the submitted Figure 2) to include an oscillator and a counter for counting the clock pulses over a period of time. Krishnan et al. (referred to as Krishnan hereinafter) show in Figure 1, a clock generator (32) including an oscillator, and a counter 40[a]) that count the clock pulses (generated by the oscillator) over a period of time (see lines 34-43 in column 2). It would have been obvious to one of the ordinary

skill in the art, at the time of the invention, to use the teachings of oscillators and counters as disclosed by Krishnan to include an oscillator and counters in the clock generator in the device disclosed by Okandan in order to provide a diversity of clock frequencies using the same oscillator as taught by Krishnan. It must be noted that the recitation *"having a frequency depending on the speed of the circuit under test"* has not been given patentable weight because there exists no structural limitations (pairing or connection) relating the control circuit to the circuit under test.

As to claim 6, Okandan in view of Wang teach all of the claimed elements as discussed above except for the clock generator to include clock control circuit controlling the frequency of clock pulses. Krishnan et al. (referred to as Krishnan hereinafter) show in Figure 1, a clock generator (32) including an oscillator (36), a counter 40[a] and a clock control circuit (44) with an input (46) for controlling the frequency of clock pulses generated by the oscillator over a period of time (see lines 34-43 in column 2). It would have been obvious to one of the ordinary skill in the art, at the time of the invention, to use the teachings of oscillators and counters as disclosed by Krishnan to include an oscillator and counters in the clock generator in the device disclosed by Okandan in order to provide a diversity of clock frequencies using the same oscillator as taught by Krishnan. Furthermore, absent a clear description of how the claimed elements are structurally connected to each other, the recitation *"on a correlation between...."* that connect the structural elements in terms of function rather than structure are not given patentable weight.

As to claim 12, the recitation *"the clock generator comprises a temperature sensor for supplying a sensed temperature of the circuit under test"* has not been given patentable weight. Absent a clear description of how the claimed elements (clock generator and device under test) are structurally connected to each other, the recitation cannot be given patentable weight.

Allowable Subject Matter

10. Claims 4, 5 and 11 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims and rewritten to overcome the rejection(s) under 35 U.S.C. 112, 2nd paragraph, set forth in this Office.

In terms of claim 4, the prior art of record does not teach alone or in combination, a test apparatus including a control circuit comprising a reference number calculator in combination with all other elements in claims 2 and 1.

As to claim 5, the prior art of record does not teach alone or in combination, a test apparatus including a control circuit comprising an oscillator and a reference number calculator in combination with all other elements in claims 3 and 1.

As to claim 11, the claim would be allowable as it further limits claims 4 or 5.

11. Claims 8-10 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, 2nd paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

As to claim 8, the prior art of record does not teach alone or in combination, a test apparatus including a threshold circuit comprising a difference circuit and a comparator connected to the output of the difference circuit and the reference number in combination with all other elements in claims 2 and 1.

As to claim 9 and 10, the claims would be allowable as they recite structure that further limit claim 8.

Conclusion

12. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. US Patents to Persons (5,917,331), McDonald (5,731,700), Manhaeve et al. (6,118,293) and US Patent Application Publication by Van Hees (2005/0270054).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Richard Isla-Rodas whose telephone number is (571) 272-5056. The examiner can normally be reached on Monday through Friday 8 am to 4:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ha Nguyen can be reached on (571) 272-1678. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Richard Isla-Rodas
December 4, 2006

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12/06/06